Participant Notebook
Field Reference Guide

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UNITS

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Unit 1 – The Big Picture

Course Objective: Identify and apply best management practices (BMPs) to reduce the visual and related resource impacts on public lands during the exploration, development and production of fluid minerals resources.

A. Your Responsibilities After the Training

- Share and discuss BMPs w/others
- Involve operators, interested parties and others from "get go"
- Implement applicable BMPs as soon as possible
- Test colors, screening materials, etc
- Document you success

B. Notes from the Director

- BLM's role - helping meet our future energy needs while protecting resource values
- Need balanced stewardship under multiple use - more challenging and complex
- People live near lands – and use them for more diverse activities
- More people appreciate scenic beauty
- Manage lands in harmony with landscape
- These practices aren't new – they are being implemented in many BLM offices
- Hope this training reinforces these techniques

C. Additional Points

- Challenge – many scenic vistas also areas with high energy potential
- With VRM and BMPs - BLM can address energy needs and visual resources
- VRM – a systematic way to identify and minimize visual impacts
- Need consistency in application

D. Overview of BMPs – From Fluid Minerals Perspective

- WO - working to promote BMPs
- Theme - "Better Ways for Better Results"
- "Face" of Oil and Gas program is what public "sees" => shapes public opinion
- If activities contrast - visual impression shapes public opinion

E. Consequences of Not Incorporating BMPs

- Longer NEPA documents
- Increased public controversy
- Increased comments, appeals, protests and litigation
- Costly mitigation
- Project delays
- Increased project costs

Bottom Line: proper VRM is critical tool for maintaining public's acceptance and support of Oil and Gas program

F. Overview From VRM Program Perspective

- Good visual mitigation - based on good environmental design
- Mitigating visual contrast – also benefits other resources
- VRM - rooted NEPA, FLPMA, VRM policy/manuals, and Planning Handbook

G. Goals Today

- Increase your understanding of VRM – how it related to Fluid Minerals
- Instill confidence and build support for you in field
- Using policy tools to achieve good land stewardship

Unit 2 - From Land Use Planning to Final Reclamation Monitoring

Objective: Provide an overview of how the Fluid Minerals development process works, from creating leasing decisions in the Land Use Plan to monitoring final reclamation success.

Also, show how the Visual Resource Management (VRM) system integrates into this overall process.

Overview - Fluid minerals development consists of many stages, including:

A. Land Use Planning
B. The Lease Sale
C. Permitting and Environmental Review
D. Exploration and Production
E. Abandonment and Reclamation

Note: The process identified below primarily addresses the Fluid Minerals development process except as noted for **VRM (See bold designation).**

A. Land Use Planning (Refer to: Land Use Planning H-1601-1; Planning for Fluid Minerals H-1624-1; Visual Resource Inventory H-8410-1; and 43CFR Part 1610 Resource Management Planning)

- The BLM's resource allocations and decisions are documented in a Resource Management Plan (RMP)/Environmental Impact Statement (EIS), which incorporates compliance with the National Environmental Policy Act (NEPA).
- During alternative formulation, areas of high fluid mineral potential, wildlife and visual values, and other resource considerations are identified.
- During alternative analysis, these issues are weighed, conflicts resolved, and decisions proposed within multiple use principles.
- **VRM:** For visual resources, the planning area is inventoried for visual qualities. These ratings are adjusted up or down in each alternative to reflect resource objectives, desired outcomes, and management themes.

VRM: The record of decision assigns VRM management classes for all acres of the planning area and establishes the visual resource standards that activities must meet.

RMPs establish:

1. **Desired Outcomes**

    a. Also known as Desired Future Conditions, Management Objectives, Goals and Standards.

    b. Outcomes guide resource uses on the lease.

    c. **VRM:** VRM objectives are established for all lands, expressed as VRM Classes, ranging from I – IV. Class IV allows for the most visual change to the existing landscape, while Class I allows the least.

2. **Allowable Uses and Actions to Achieve Desired Outcomes**

    a. Areas Open or Closed to Leasing

    - Open subject to the Terms and Conditions of the standard lease form.

      VRM: Section 6 of the standard lease form refers to conduct or operations in a manner that minimizes the impact to visual resources.
    - Open subject to major (no surface occupancy); or minor (timing limitation, controlled surface use) constraints.
    - Closed to leasing because resource values cannot be protected with even the most restrictive stipulations (no leasing)

    b. Leasing Stipulations

    - Establish authority for substantial delay, site changes, or denial of operations within terms of the lease contract.
        - **VRM:** A VRM lease stipulation is not typically required, but a "lease notice" may be a helpful tool for informing the lessee of Class I and II requirements, where applicable.
        - **VRM:** Under certain situations, a leasing stipulation may be developed to address VRM related objectives such as protection of the view from a scenic byway, scenic overlook, or historical trail.
    - Stipulations must have Exception, Waiver, and Modification criteria.
    - The least restrictive constraint to meet the resource protection objective should be used.

    c. Reasonably Foreseeable Development Scenario (RFD)

    - Use RFD estimates to assist in comparing and evaluating environmental impacts of foreseeable future fluid mineral development under each EIS Alternative analyzed in the EIS.

    d. Geophysical Exploration - Determine whether the RMP decisions apply to geophysical exploration.

Do <u>new</u> land use plan constraints and requirements apply to existing leases?

"The plan or plan amendment must explain how, if at all, identified leasing, exploration, development, production and abandonment constraints or requirements will be applied in areas currently under lease." (H-1624-1,IV,C1)

The extent to which requiring conformance with the approved land use plan is consistent with valid existing lease rights depends on the extent to which the conformance would interfere with the lessee's opportunity to economically recover the oil and gas resource. BLM is required (43CFR1610.5-3(b)) to "take appropriate measures, subject to valid existing rights" to bring operations and activities under existing permits, contracts, etc… into conformance with the approved RMP or Amendment.

<u>BLM State Office Consistency Review</u>:

The BLM State Office conducts reviews at each planning stage to ensure that, to a reasonable extent, draft, proposed, and final RMPs within the State are consistent with each other and with BLM State and National Program Guidance.

<u>State Government Consistency Review</u>:

The Governor of the State also reviews the Proposed RMP/Final EIS to ensure consistency with State plans.

B. The Lease Sale

BLM conducts a Fluid Mineral review to ensure the requirements of the land use plan are incorporated into parcels offered for competitive leasing.

- The State Office forwards parcels to the Field Offices for review prior to advertising for competitive leasing.
- The Field Offices check to ensure proper lease stipulations are carried forward from the land use plan to the lease.
- The Field Offices determine through the Documentation of NEPA Adequacy (DNA) process if changes since the RMP/EIS was written warrant new or modified lease stipulations or withholding the parcel from sale. If conditions warrant, an RMP lease stipulation may be waived or modified.

  (VRM) The Field Offices may recommend a Lease Notice, for VRM Class I & II areas, be attached to the lease to inform the purchaser that operations must conform to the requirements of the applicable VRM class.
- The State Office attaches the appropriate stipulation(s), if any, to the lease parcels. The parcels and associated stipulations are subject to 45-day public review prior to the competitive sale.
- Parcels are offered for sale at the quarterly (or more frequent) lease sale.
- Parcels not sold at the competitive sale become available for noncompetitive leasing for a 2-year period. If a lease is sold noncompetitively, the State Office should ensure the stipulations advertised on the Competitive Sale List remain appropriate for lease issuance.

Pre-Application Meeting

The Pre-application meeting is becoming increasingly important. Applicants and the BLM field staff should meet prior to the filing of a Notice of Staking (NOS) or Application for Permit to Drill (APD) to share information and ensure streamlined permitting procedures.

The BLM meets with the operator in the field or in the office to:

- Discuss in broad or specific terms, the company's future development plans for the area including wells, roads, utilities, and production facilities.
- Discuss BLM's management goals and objectives for the area, sensitive resources, and potential mitigation measures.

  (VRM) This is an important time to discuss VRM class objectives and potential Best Management Practices for achieving VRM objectives.
- Discuss Standard Operating Practices for the development area.

C. The Permitting Process (Oil and Gas Onshore Order No. 1)

There are two APD permitting process options available to the Operator:

1. APD Process: The operator submits the APD to the BLM and then meets onsite with the BLM to review the application, especially the Surface use (13-point) Plan.

- In the case of split-estate, (i.e., fee, State, or other Federal Agency surface underlain by Federal minerals) the surface owner/manager is invited to attend the onsite inspection.
- BLM, the surface owner/manager, and the operator discuss resource issues and how they relate to road, pad, utility, and production facility location and design.
- At the onsite meeting, BLM may inform the operator of potential conditions of approval and may discuss relocating the road or well location to protect other resource values.

2. Notice of Staking/APD Process: The Notice of Staking process offers the advantage of an onsite meeting to work out operational issues before the APD is submitted.

- The BLM and operator discuss mitigation measures and BLM encourages the operator to incorporate recommended mitigation measures and Best Management Practices into the APD submission.
- This allows the operator to submit a more complete APD, which in turn simplifies APD processing and review and can result in accelerated permit approval.

Common to both: VRM: The onsite meeting is a good opportunity to discuss VRM objectives and Best Management Practices designed to help meet VRM objectives.

BLM Receives an APD

An APD is evaluated to ensure the proposal conforms to objectives and decisions in the RMP, including VRM objectives, and to weigh approval options in a multiple use context.

The BLM conducts its evaluation, or analysis, through the NEPA process.

Environmental Review (NEPA Handbook H-1790-1)

In general, actions that are expected to have a "significant" impact are analyzed through the Environmental Impact Statement (EIS) Process. Actions not expected to have a "significant" impact, are analyzed through the Environmental Assessment (EA) Process. Actions adequately addressed in an existing EIS or EA may be evaluated in the Documentation of NEPA Adequacy (DNA) process. The EA and EIS have several parts in common:

1. **Purpose and Need:**
   - Why does the operator want to drill the well?

2. **Proposed Action:**
   - What has the operator proposed?
   - The proposed action may include applicant-offered mitigation.

3. **Alternatives**:
   - Are there other ways to develop the mineral resource with less environmental impact?
   - Reasonable (technical and economic) alternatives to the operator's proposal may be analyzed to achieve plan conformance and reduce environmental impacts.

4. **Affected Environment:**
   - What resources are in the area that could be affected?
   - **VRM:** this section must include description of visual resource inventory & management classes.

5. **Environmental Impacts:**
   - What are the environmental consequences of the Proposed Action and each Alternative?
   - BLM discloses and evaluates the Environmental Consequences/Cumulative Impacts of the Operator's proposal and any Alternatives.
   - **VRM:** Impacts to visual resources must be addressed consistently for each alternative. Visual simulations may be a valuable tool to disclose visual effects to the public.

6. **Consultation and Coordination*:***
   - Which agencies and interest groups has the BLM coordinated with?

7. **Finding of No Significant Impact:**
   - Can BLM issue a Finding of No Significant Impact?
   - If not, an EIS is required or the project must be modified or denied.

8. **Decision Record for an EA or Record of Decision for and EIS:**
   - BLM issues a decision to either approve the APD with mitigation measures, (the Conditions of Approval (COAs) to the approved APD), or to deny the proposal.

Through the NEPA process, the BLM may determine that it is practical or necessary to grant an Exemption, Waiver, or Modification to a lease stipulation.

Old Lease - New Information

If BLM is reviewing an APD for an area covered by an old lease...

- What new information, since the lease was issued, needs to be considered in the NEPA analysis for the APD? What has changed? Does BLM need to place more restrictions on the APD or can we grant "exemptions" to the current lease stipulations? Consider…..
  - Has there been a new RMP or Amendment with new requirements for the area?
  - Has a Field Development environmental analysis been completed?
  - Is the urban interface encroaching on fluid mineral development, or vice versa?
  - Have there been additions of species protected by the Endangered Species Act, or delistings?
  - Has a new Scenic Byway designated in the area?

- BLM can move the well location more than 200 meters in distance, restrict the project more than 60 days, or require other reasonable measures to minimize adverse impacts. (43 CFR 3101.1-2 Surface use rights; Lease Form 3100-11, Section 6) to protect sensitive resources, comply with laws, regulations, and land use plans.

However, BLM must remain consistent with lease rights granted…

- Whenever possible, negotiate mitigation options with the operator and obtain the operator's concurrence.
- To comply with nondiscretionary actions (laws), such as the Endangered Species Act, BLM must take actions that are necessary to protect the sensitive resource. Lease "Rights granted are subject to applicable laws…" (Lease Form 3100-11, Last Section, Page 1).
- For discretionary actions (everything that is not a law), such as compliance with the requirements of a new RMP or taking actions to minimize adverse impacts, BLM may impose greater restrictions when less stringent measures would be ineffective and the new measures do not render the recovery of fluid minerals infeasible or uneconomic.
- In both cases, BLM needs to evaluate less stringent options and document the analysis in the EA or EIS.

D. Exploration and Production

- BLM performs periodic compliance inspections to ensure that the terms and conditions of the approved APD are implemented. (Did operator do what we've asked/they've agreed to do?) For example, were all production facilities painted the required color?
- The inspector needs to be familiar with the requirements of the approved APD and the resources in the area that BLM is trying to protect.
- The inspector must have reasoned judgment, the ability to negotiate changes or action by the operator, and the ability to enforce the APD requirements.
- Compliance also includes "monitoring"- (Were BLM's mitigation requirements effective? If not, what changes are needed?)

BLM performs the following Operations inspections as time and staffing allow:

- Prior to surface disturbance to record baseline conditions.
- During construction to ensure surface disturbance is within the limits established in the APD.
- During drilling to ensure a safe and clean operation.
- During production to ensure a safe and clean facility and to account for mineral production.

E. Abandonment and Reclamation:

The "reclamation stage" is one of the most critical. Success or failure here determines how the site will "look and perform" for many years to come. A damaged landform or mismatched vegetation will attract unwarranted attention and reduce forage and habitat for a long, long time.

- BLM's approval to abandon & reclaim is required.
- For newer wells, the Reclamation Plan is a part of the approved APD.
- In the case of older wells, the operator proposes a Reclamation Plan for BLM's review and approval. (Lease Form 3100-11, Section 6, 2nd Paragraph)

Partial reclamation of drilling areas may occur during production.

Goal of final reclamation is to re-establish native vegetation and restore the landform to its natural character

BLM performs the following Abandonment and Reclamation inspections as time and staffing allow:

- Prior to reclamation to discuss reclamation requirements. (In the case of split-estate, include the surface owner/manager input).
- During abandonment and reclamation to ensure the well is being properly plugged and reclamation is being completed correctly.
- Following reclamation to ensure the site is properly re-contoured, topsoil is returned to the disturbed areas, and seed is sewn.
- 1, 2, 3 or more years following reclamation to ensure the site is stable and re-vegetating. When BLM determines that the site is fully reclaimed (re-contoured, vegetated, weed free, junk free, and stable), BLM will approve the Final Abandonment Notice.
- BLM monitors the site over the long term to ensure the site maintains its stability and ecosystem function is fully restored.

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Unit 3 – Overview of VRM Concepts

Objective: Provide overview of BLM's visual management system, including how visual values are identified during the land use planning process and how activities can be designed to meet objectives set for visual resources to minimize contrast with landscape.




A. What is VRM? Why do we USE it?

- **Visual Resources are a Public Resource.**
  - The public lands administered by BLM contain many outstanding scenic landscapes.
  - Activities occurring on these lands, such as recreation, mining, timber harvesting, grazing, or road development, for example, have the potential to disturb the surface of the landscape and impact scenic values.
  - Visual resource management (VRM) is a system for minimizing the visual impacts of surface-disturbing activities and maintaining scenic values for the future.

- **Western Population Growth and Importance of Recreation and Tourism:**
  - Western states have experienced rapid growth and development
  - Public lands have been increasingly used for outdoor recreation and tourism.
  - Many rural communities are reliant on tourism to sustain their economies.
  - Thus, the management of the scenic values of public lands has become a much more important aspect of natural resource management to BLM.

- **Consequences of not addressing visual concerns:**
  - When visual resources are not carefully managed and the visual impacts of poorly designed surface-disturbing activities are ignored, there can be dire consequences to the scenic values of American landscapes.



These images reflect strong visual contrasts created by individual activities and cumulative effects.

- **Benefits of addressing visual concerns:**

    - The benefits to be gained by carefully designing surface-disturbing activities to minimize visual impacts are readily apparent. BLM is committed to sound management of the scenic values on public lands in order to ensure that these benefits are realized and the scenic values are protected.


Road that follows contours of landscape.


Pipeline that has been reclaimed and re-vegetated.


Creative pipeline alignment.


Transmission tower (left) painted to blend with vegetation.

B. Legal Obligation and Authorities

By law, BLM is responsible for managing public lands for multiple uses. But BLM is also responsible for ensuring that the scenic values of these public lands are considered before allowing uses that may have negative visual impacts.

- **The National Environmental Policy Act of 1969 (NEPA)** 43 U.S.C. 4321 et. seq.;
    - Section 101 (b). Requires measures be taken to " ...assure for all American...esthetically pleasing surroundings...."
    - Section 102. Requires agencies to "Utilize a systematic, interdisciplinary approach which will ensure the integrated use of...Environmental Design Arts in the planning and decision making...."

- **The Federal Land Policy and Management Act of 1976 (FLPMA)** 43 U.S.C. 1701 et. seq.;

    - Section 102 (a)(8). States that "...the public lands be managed in a manner that will protect the quality of the...scenic...values...."

    - Section 103 (c). Identifies "scenic values" as one of the resources for which public land should be managed.

    - Section 201 (a). States that "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including...scenic values)...."

    - Section 505 (a). Requires that "Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic values...."

- **BLM Policy: Manual Section 8400- Visual Resource Management**

    - The Bureau has a basic stewardship responsibility to identify and protect visual values on public lands.

    - Each program (i.e., Range, Forestry, Minerals, Lands, etc.) involved in resource development work is responsible for protecting visual values. This includes ensuring that:
        - Personnel in each program who are involved in activities which affect visual values are properly trained in visual management techniques
        - Visual values are adequately considered in all management activities
        - Adequate guidance and funding is available to accomplish these purposes.

    - The Bureau shall prepare and maintain on a continuing basis an inventory of visual values on all public lands.

    - Visual management objectives (classes) are developed through the RMP process for all Bureau lands.

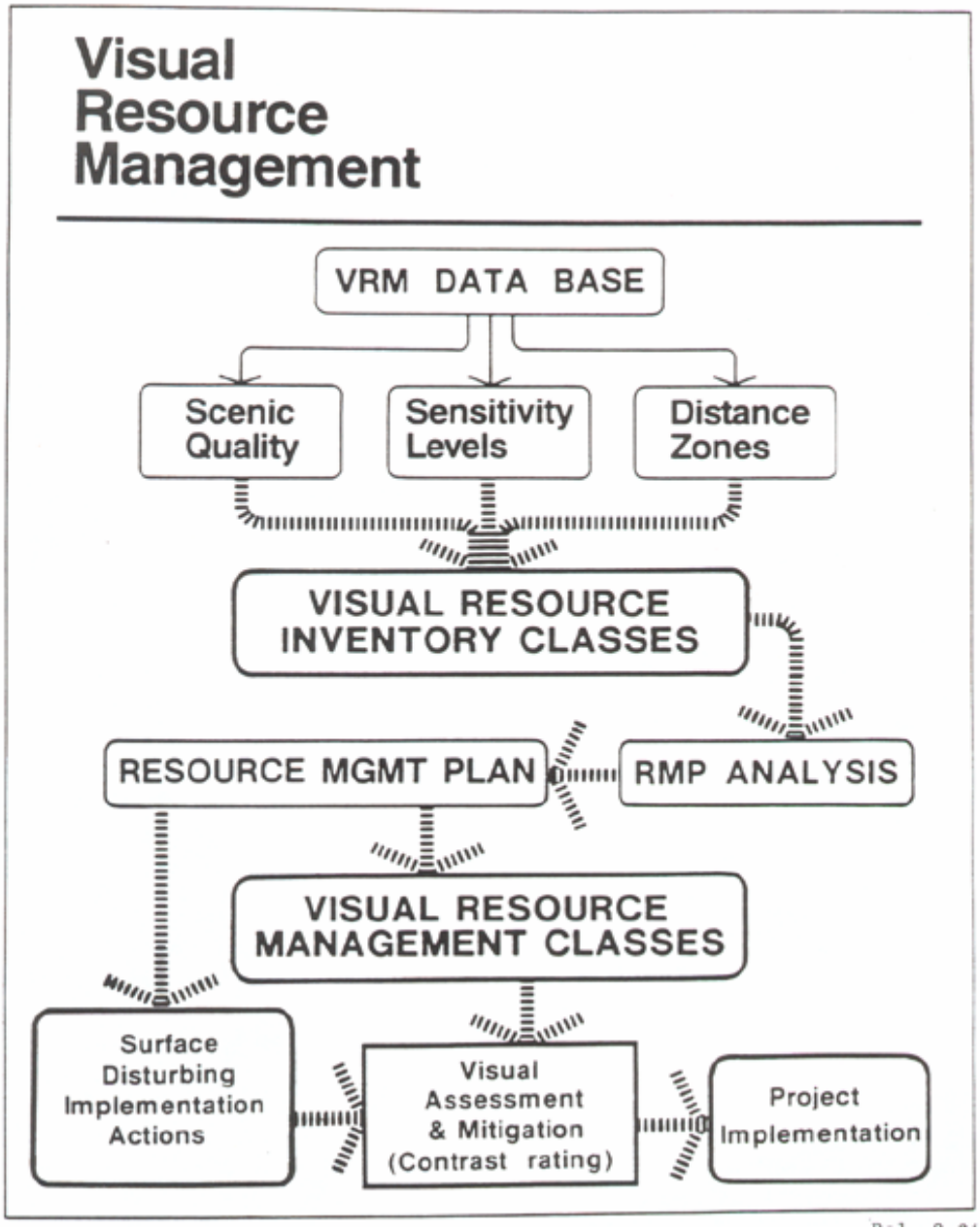
    - The approved VRM objectives (classes) provide the visual management standards for the design and development of future projects and for rehabilitation of existing projects.

    - The contrast rating process (Manual Section 8431) is used as a visual design tool in project design and as a project assessment tool during environmental review.

a. VRM System

- Public lands have a variety of visual values which warrant different levels of management. VRM is used to systematically identify and evaluate these values to determine the appropriate level of management.

- The **VRM process** involves 1) inventorying scenic values, 2) establishing management objectives for those values through the resource management planning process, and 3) then evaluating proposed activities to analyze effects and develop mitigations to meet established VRM objectives.



1. INVENTORY:

- Visual values are identified through the VRM inventory process (Manual Section 8410)
- Visual resource inventory is based on an analysis of three primary criteria influencing visual values; a) Scenic Quality, b) Public Sensitivity, and 3) Distance Zones from primary travel ways or special areas.
- A matrix (see diagram) is used to combine relative ratings in each of the criteria to come up with an overall Visual Resource Inventory rating (the exception is for areas to manage as VRM Class I). All acres of BLM land must be inventoried.

Basis for Determining Visual Resource Inventory Classes

1. Class I. Class I is assigned to all special areas where the current management situations requires maintaining a natural environment essentially unaltered by man.

2. Classes II, III, and IV. These classes are assigned based on combinations of scenic quality, sensitivity levels, and distance zones as shown in the following matrix:

Visual Sensitivity Levels

		High			Medium			Low
Special Areas		I	I	I	I	I	I	I
Scenic Quality	**A**	II	II	II	II	II	II	II
	B	II	III	III* IV*	III	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV
		f/m	**b**	**s/s**	**f/m**	**b**	**s/s**	**s/s**
		DISTANCE ZONES						

* If adjacent areas is Class III or lower assign Class III, if higher assign Class IV

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2. VRM CLASSES:

- Visual Resource Inventory ratings are considered with other resource values and allocations during the Resource Management Planning (RMP) process.
- These ratings are adjusted up or down in each alternative to balance with other resource concerns and management themes.
- The Record of Decision and Final RMP must define the final Visual resource management objectives for the planning area. VRM objectives must be assigned to all acres of BLM managed land.
- Expressed as VRM Classes, VRM objectives range from VRM Class I – IV. Class IV allows for the most visual change to the existing landscape, while Class I allows the least (see diagram).
- VRM Classes are area-specific objectives that provide the standards for planning, designing, and evaluating future management projects.

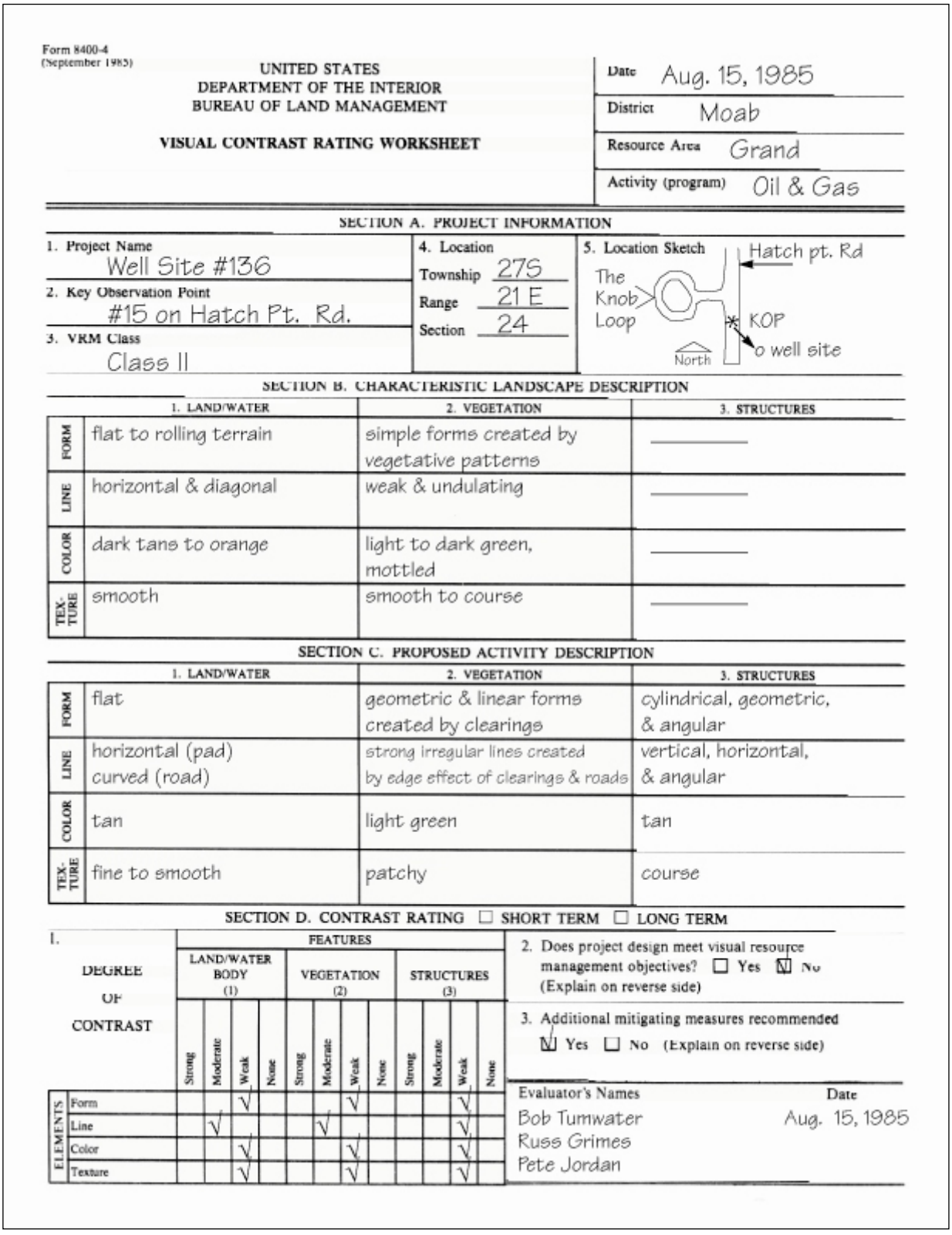
VRM CLASS	Visual Resource Objective	Change Allowed (Relative Level)	Relationship to the Casual Observer
Class I	**Preserve** the existing character of the landscape. Manage for natural ecological changes.	**Very Low**	Activities should not be visible and **must not attract attention**.
Class II	**Retain** the existing character of the landscape.	**Low**	Activities may be visible, but **should not attract attention.**
Class III	**Partially retain** the existing character of the landscape.	**Moderate**	Activities **may attract attention** but **should not dominat**e the view.
Class IV	Provide for management activities which require **major modification** of the existing character of the landscape.	**High**	Activities **may attract attention, may dominate** the view, but are still mitigated.

3. ACTIVITY PLANNING/EVALUATION:

- After VRM Classes are established in the RMP, all subsequent activities must be designed, evaluated, and modified to meet these objectives.
- The VRM system is designed to lend objectivity and consistency to the analysis process.
- The basic design elements of Form, Line, Color, and Texture are used to evaluate landscapes in order to minimize their potential contrasts with the natural landscape.
- Modifications in a landscape which repeat these elements are thought to *be in harmony* with their surroundings. Modifications which do not harmonize are said to *be in contrast* with their surroundings.
- The Contrast Rating Form is used as a systematic method for describing the landscape, evaluating the visual effects of activities, and for developing mitigations to meet the VRM objectives established for that area. (See Figure 1).
- The VRM system relies on fundamental design techniques and strategies in order to mitigate visual impacts of proposed projects.

Figure 1: Contrast Rating Form

The contrast rating system (Manual Section 8431) provides a systematic means to describe a particular landscape, evaluate proposed projects and determine whether these projects conform with the approved VRM objectives. It also provides a means to identify mitigating measures that can be taken to minimize adverse visual impacts. The example below reflects analysis of a fluid minerals activity.



Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date: Aug. 15, 1985
District: Moab
Resource Area: Grand
Activity (program): Oil & Gas

SECTION A. PROJECT INFORMATION

1. Project Name: Well Site #136
2. Key Observation Point: #15 on Hatch Pt. Rd.
3. VRM Class: Class II
4. Location: Township 27S; Range 21 E; Section 24
5. Location Sketch: Hatch pt. Rd; The Knob Loop; KOP; o well site; North

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat to rolling terrain	simple forms created by vegetative patterns	
LINE	horizontal & diagonal	weak & undulating	
COLOR	dark tans to orange	light to dark green, mottled	
TEXTURE	smooth	smooth to course	

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	flat	geometric & linear forms created by clearings	cylindrical, geometric, & angular
LINE	horizontal (pad) curved (road)	strong irregular lines created by edge effect of clearings & roads	vertical, horizontal, & angular
COLOR	tan	light green	tan
TEXTURE	fine to smooth	patchy	course

SECTION D. CONTRAST RATING ☐ SHORT TERM ☐ LONG TERM

1. DEGREE OF CONTRAST

ELEMENTS	FEATURES: LAND/WATER BODY (1) Strong	Moderate	Weak	None	VEGETATION (2) Strong	Moderate	Weak	None	STRUCTURES (3) Strong	Moderate	Weak	None
Form			√				√				√	
Line		√				√					√	
Color			√				√				√	
Texture			√				√				√	

2. Does project design meet visual resource management objectives? ☐ Yes ☒ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names: Bob Tumwater, Russ Grimes, Pete Jordan
Date: Aug. 15, 1985

D. Basic Landscape Design (VRM) Techniques:

There are numerous design techniques that can be used to reduce the visual impacts from surface-disturbing projects. The techniques described here should be used in conjunction with BLM's visual resource contrast rating process wherein both the existing landscape and the proposed development or activity are analyzed for their basic elements of form, line, color, and texture (FLCT).




Design fundamentals are general design principles that can be used for all forms of activity or development, regardless of the resource value being addressed. Applying these three fundamentals will help solve most visual design problems:

- Proper siting or location
- Reducing unnecessary disturbance
- Repeating the elements of form, line, color, and texture

Design strategies are more specific activities that can be applied to address visual design problems. Not all of these strategies will be applicable to every proposed project or activity:

- Color selection
- Earthwork
- Vegetative manipulation
- Structures
- Reclamation/restoration
- Linear alignment design considerations

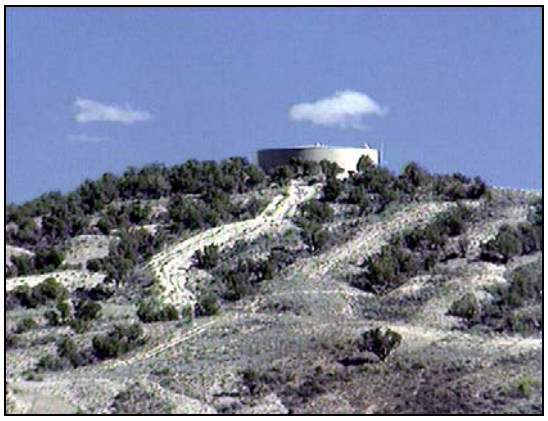
The fundamentals and strategies are all interrelated, and when used together, can help resolve visual impacts from proposed activities or developments.

DESIGN FUNDAMENTALS:

Proper Siting or Location: Choosing the proper location for a proposed project is one of the easiest design techniques to understand and apply, and one that will normally yield the most dramatic results. The following considerations can be helpful in choosing a project location:

- Visual contrasts or impacts decrease as the distance between the viewer and the proposed development increases, so projects should be located as far away from prominent viewing locations as possible.
- The shape and placement of projects should be designed to blend with topographic forms and existing vegetation patterns.
- The human eye is naturally drawn to prominent topographic features, so projects should not be located on or near such features.
- Both topographic features and vegetation should be used to screen proposed development.

Using existing openings, lines, and shapes in the landscape can help reduce visual impacts.



This water tank is set back from the crest of the hill, thereby reducing the visual impact; however, the access road could have been better located.

Natural vegetation, earth mounding, or architectural treatments can be used to screen development.

Reducing Unnecessary Disturbance As a general rule, reducing the amount of land disturbed during the construction of a project reduces the extent of visual impact. Techniques that help reduce surface disturbance include:

- Co-locating several projects within the same right-of-way.
- Placing underground utilities either along the edge or under the surface of an existing road.
- Placing several underground utilities within the same trench.
- Establishing limits of disturbance that reflect the minimum area required for construction.
- Consolidating development of a similar nature within a common structure.
- Planning projects so that they utilize existing infrastructure whenever possible.
- Maximizing slope when it is aesthetically and technically appropriate.
- Locating construction staging and administrative areas in less visually sensitive areas.
- Requiring restoration of disturbed areas no longer required after construction has been completed .

Downslope wasting of excess material dramatically increases the size of the visual scar.

Consolidation of communications facilities reduces the Amount of visual sprawl.

This pipeline location avoids the wooded area and minimizes disturbance.

Repeating the Elements of Form, Line, Color, and Texture Every landscape has the basic elements of form, line, color, and texture. Repeating these elements reduces contrasts between the landscape and the proposed activity or development and results in less of a visual impact. Use existing landforms, vegetation patterns, natural lines in the landscape, etc., to reinforce the design of the proposed activity or development. By "playing off" of these naturally occurring elements, the design of the proposed development will be in closer harmony with the natural landscape. Note: Photographic examples of this can be found throughout the other design strategy examples.

The electrical tower in this photo virtually disappears because of the repetition of the lines and colors of this landscape and the lack of a clearcut right-of-way.

This road alignment repeats the forms of this landscape.

These cellular telephone towers repeat forms, lines, colors, and textures in this landscape

The clearing of this hillside works well with the existing lines and vegetative patterns found in this landscape.

The vegetative clearing in this photo repeats the natural forms and shapes found in the landscape.

Replacement of rock on this exploratory drilling site repeats the texture of this landscape.

DESIGN STRATEGIES:

Color Selection

Most of the time, color selection will have the greatest impact on the visual success or failure of your projects. Strong contrasts in color create easily recognizable visual conflicts in the landscape.

The following considerations can be helpful in making color selections:

- Natural surfaces are usually well-textured and have shade and shadow effects that darken them; surfaces of structures are usually smooth and reflect light even if dull-finish paint is used. So, as a general rule of thumb, colors on smooth manmade structures need to be two or three shades darker than the background colors to compensate for the shadow patterns created by naturally textured surfaces that make colors appear darker.
- The color selection for all structures should be made to achieve the best blending with the surrounding landscape in both summer and winter.
- Galvanized steel on utility structures should be darkened to prevent glare. Low luster paints should be used wherever possible to help reduce glare. It is almost impossible to remove all sun glare.
- Color (hue) is most effective within 1,000 feet. Beyond that point, color becomes more difficult to distinguish and tone or value determines visibility and resulting visual contrast.

The color selected for this electrical tower blends well with the rock formations surrounding it.

The color selected for the back of this highway sign blends well with the colors in this landscape.

Color Considerations (Cont.)

- Surface disturbance of western mineralized soils can result in strong color contrasts. In many situations, this suggests that the area should be avoided as a location for the proposed development, or that color selections for the manmade facilities or disturbance might need to reflect the lighter colored soil revealed by the disturbance.
- Colors should be selected from a distance that permits viewing of the entire landscape surrounding the proposed development.
- Colors that blend with or are in harmony with the existing colors of the earth, rocks, and vegetation are usually more visually pleasing and attract less attention than colors that are chosen to match the color of the sky.

It is important to select colors that are in harmony with the natural colors in the landscape, thereby avoiding strong contrasts.

The color of these guard rails is appropriate because it creates very little visual contrast.

Earthwork

The scars left by excessive cut and fill activities during construction in our western landscapes often leave long-lasting negative visual impacts. This is especially true of activities that disturb the highly mineralized soils of the arid west. Once the dark surface soil layer is disturbed, exposing the much lighter color of the subsurface soil, a strong contrast is created that may take many years to recover.

There are a number of ways to reduce the contrasts created by earthwork construction. Proper location and alignment are probably the most important factors. Fitting the proposed development to the existing landforms in a manner that minimizes the size of cuts and fills will greatly reduce visual impacts from earthwork. Other earthwork design techniques, such as balancing cut and fill or constructing with all fill or all cut should be considered, where appropriate, as methods to reduce strong visual impacts.

Earthwork – Other Strategies are:

- Hauling in or hauling out excessive earth cut or fill in sensitive viewing areas.
- Rounding and/or warping slopes (shaping cuts and fills to appear as natural forms).
- Bending slopes to match existing landforms.
- Retaining existing rock formations, vegetation, drainage, etc., whenever possible.
- Split-face rock blasting (cutting rock areas so that the resulting rock forms are irregular in shape, as opposed to making uniform "highway" rock cuts).
- Toning down freshly broken rock faces through the use of asphalt emulsions, rock stains, etc..
- Using retaining walls to reduce the amount and extent of earthwork.
- Retaining existing vegetation by using retaining walls, reducing surface disturbance, and protecting roots from damage during excavations.
- Avoiding soil types that will generate strong contrasts with the surrounding landscape when they are disturbed.
- Prohibiting dumping of excess earth/rock on downhill slopes.

Rounding the top and bottom of the slope and also undulating the face of the slope create a more natural-looking landscape.

The rock gabion treatment of this hillside creates strong contrasts in line and color.

This recontoured slope blends well by repeating the existing forms and lines found in this landscape.

Vegetative Manipulation

Another effective method of reducing the visual impact from a proposed activity or development is to retain as much of the existing vegetation as possible, and where practical, to use the existing vegetation to screen the development from public viewing areas.

Some other techniques include:

- Designing vegetative openings to repeat natural openings in the landscape. Edges that are scalloped and irregular are more natural-looking. Straight line edges should be avoided.
- Minimizing the impact on existing vegetation by:
    - Partial clearing of the limits of construction rather than clearing the entire area – leaving islands of vegetation results in a more natural look.
    - Using irregular clearing shapes.
    - Feathering/thinning the edges of the cleared areas. Feathering edges reduces strong lines of contrast. To create a more natural look along an edge, a good mix of tree/shrub species and sizes should be retained.
    - Disposing of all "slash."

Vegetative clearings of an irregular shape blend well in this landscape.

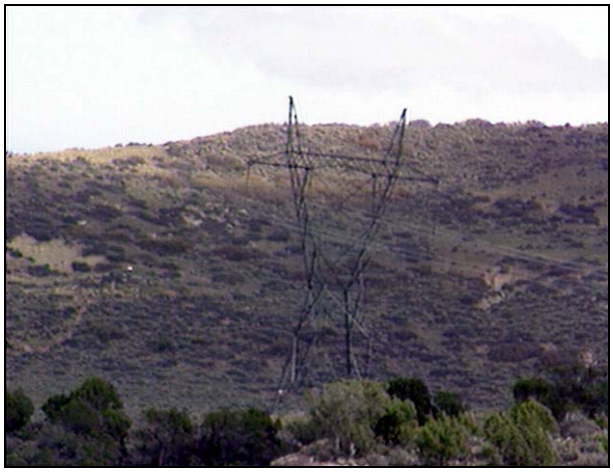
The design of this ski slope incorporates irregular shapes, but the hard, unthinned edges create a strong visual contrast.

Structures

The visual impact from new structures placed on the existing landscape can be reduced by:

- Repeating form, line, color, and texture.
- Minimizing the number of structures and combining different activities in one structure wherever possible.
- Using earth-tone paints and stains.
- Using self-weathering metals.
- Chemically treating wood so that it can be allowed to self-weather.
- Using natural stone in wall surfaces.
- Burying all or part of the structure.
- Selecting paint finishes with low levels of reflectivity.
- Using rustic designs and native building materials.
- Using natural-appearing forms to complement landscape character.
- Screening the structure from view through the use of natural landforms and vegetation.

The use of native materials in this early American structure helps it blend with the landscape.



The open lattice design of this electrical transmission tower virtually disappears in this western landscape.

Restoration/Reclamation:

- Strategies for restoration and reclamation are very much akin to the design strategies for earthwork, as well as the design fundamentals of repeating form, line, color, and texture and reducing unnecessary disturbance.
- The objectives of restoration and reclamation include:
  - Reducing long-term visual impacts by decreasing the amount of disturbed area

- And blending the disturbed area into the natural environment while still providing for project operations.

- Though restoration and reclamation are a separate part of project design, they should not be forgotten or ignored.
- It is always a good idea to require a restoration/reclamation plan as **part of the original design package**.
- All areas of disturbance that are not needed for operation and maintenance should be restored as closely as possible to previous conditions.

Place for Additional Notes

Several strategies that can enhance any restoration or reclamation effort include:

- Striping, saving, and replacing topsoil (6-inch surface layer) on disturbed earth surfaces.
- Enhancing vegetation by:
  - Mulching cleared areas
  - Furrowing slopes.
  - Using planting holes on cut/fill slopes to retain water.
  - Choosing native plant species.
  - Fertilizing, mulching, and watering vegetation.
  - Replacing soil, brush, rocks, forest debris, etc., over disturbed earth surfaces when appropriate, thus allowing for natural regeneration rather than introducing an unnatural looking grass cover.
- Minimizing the number of structures and combining different activities in one structure wherever possible.

Disturbed areas can be recontoured, then roughened, to trap water and aid vegetation regrowth. Rocks and other natural debris can be replaced afterwards to help blend with adjacent, undisturbed areas.

Before

After

Linear Alignment

Projects and activities associated with linear alignments include rights-of-way, roads, trails, pipeline developments, and underground and overhead utility lines. The visual impact of a linear project depends largely on where it is located and how it is molded to the natural terrain.

Proper location can often contribute significantly to the reduction of line and color impacts, making other measures either unnecessary or less costly and easier to accomplish.

Finding the best route for linear alignments involves:

- Identifying and analyzing all possible corridor alignments and selecting the one most feasible for the proposed project.
- Locating the proposed project within the selected corridor after a thorough analysis of all environmental, socioeconomic, and engineering factors.

These linear alignments respect (repeat) the forms and line in the landscape, helping to minimize contrast.

These linear alignments do not repeat the forms, lines, colors, or textures of the landscape, thereby creating strong contrasts.

Linear Alignment (Cont.)

There are several major considerations for determining an alignment:

- Topography is a crucial element in alignment selection. Visually, it can be used to subordinate or hide manmade changes in the landscape. Projects located at breaks in topography or behind existing tree groupings are usually of much less visual impact than projects located on steep side slopes. By taking advantage of natural topographic features, cut and fill slopes can be greatly minimized.
- Topographic breaks frequently exhibit a natural line element that the proposed alignments can repeat or blend with to strengthen the design. This line element is partly established by a visual shadow zone, which will further aid in reducing the contrast of the project.
- Soils are especially important when selecting an alignment. They should be analyzed for stability and fertility and a re-vegetation program should be planned.
- Hydrological conditions can strongly affect the visual impact of buried and surface construction. The risks of surface and subsurface erosion within the corridor should be analyzed and evaluated.
- Crossings with other linear features or structures should be designed to minimize their visual impact:
  - When possible, crossings should be made at a right angle.
  - Structures should be set as far back from the crossing as possible.
  - In areas with tree and shrub cover, the rights-of-way and structures should be screened from the crossing area.

It is important to remember that when a system is planned and designed:

- Other services that will be needed to support the system must be analyzed and included in the design considerations. For example, a construction access road, electrical power with a backup system, and sanitation facilities are usually needed for most projects. At times, the visual impact of the support facilities is the deciding factor for the specific location of the main project.
- How the system is to be maintained must also be considered.
- A rehabilitation plan should also be developed. All areas of disturbance that are not needed for operation and maintenance should be restored as closely as possible to previous conditions.

Determining the engineering design, landscape design, and visual considerations for a linear alignment must be accomplished together to ensure that all three are addressed and included in the final design solution.

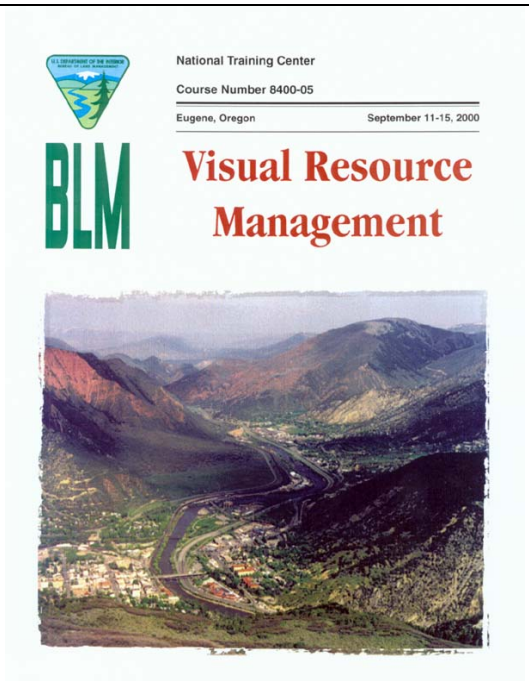
E. Resources and For Further Information

The following are resources for obtaining more information regarding the visual resource management system and opportunities for further training.

TRAINING:

Visual Resource Management

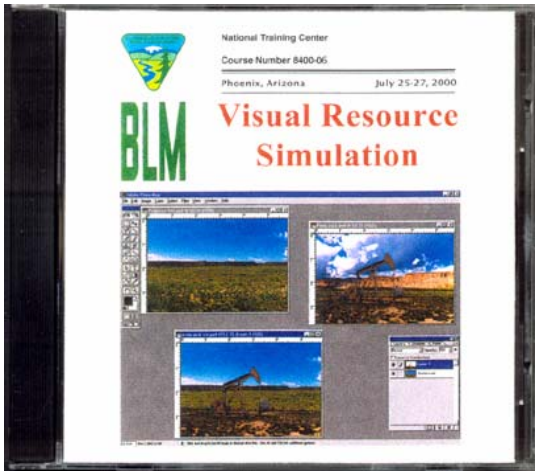
- The 5-day basic Visual Resource Management training course has in the last few years trained over 300 BLM employees along with other agencies specialists and private consultants.
- This course teaches the fundamental principles associated with minimizing visual impact through classroom instruction followed by field-based application and reinforcement of learning each day.
- The course has been nominated for National Awards in communication by the American Society of Landscape Architects.
- **Offered yearly** at various field sites. Next offering is schedule for <u>September, 2004 in Moab, Utah.</u>



Visual Resource Simulation

- Developed with help from Utah State University
- The BLM's Visual Resource Simulation training is a hands-on instruction in the use of image-editing software to simulate the visual effects of resource activities.
- Field specialists learn the latest technologies in creating accurate, defensible, photo-realistic simulations of the effects associated with proposed activities.
- Simulations such as these can be used internally to help staff as well as externally with the public to better demonstrate the expected impacts of potential BLM management decisions.
- This course received a National Merit Award from the Utah Chapter of American Society of Landscape Architects.
- Won Award from Utah Chapter, Society of Landscape Architects

Offered each March, at the <u>National Training Center in Phoenix.</u>

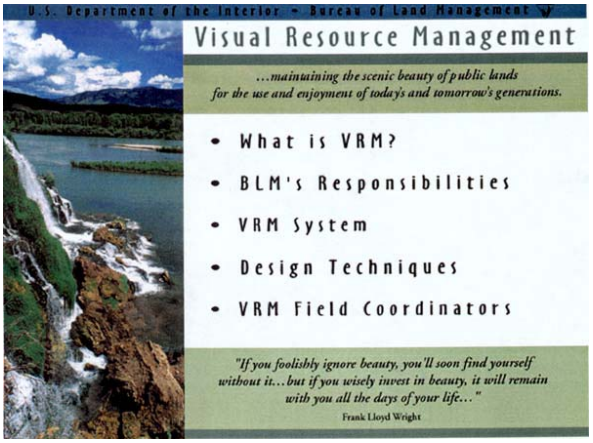


Visual Resource Management Website:

- Sometimes the best training is that which can be found "just in time."
- This site contains 5 sections
  - What is VRM
  - BLM's responsibilities
  - VRM system – more details on what it is and why we use it
  - Design techniques
  - List of VRM coordinators

- The VRM website is designed to be a resource for field staff, managers, and experience VRM specialists to obtain information regarding the VRM system, policy manuals and handbooks, and design techniques for mitigation of activities.
- The VRM website has been used by individuals, agencies, and governments around the globe as an important portal for visual resource information.
- A search-engine interface is being developed to allow visitors the chance to query for "good, bad, and ugly" examples of various project types.

- The website can be accessed at: www.blm.gov/nstc/VRM



For More Information or inquiries, contact:

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Unit 4 – Best Management Practices

Objective: Provide examples of existing BMPs that field can use to reduce the potential visual impacts by proper site selection, reducing unnecessary disturbance, good color selection, and effective final reclamation.

A. Overview

- Following pages contain about 50 photos and images
- These are existing examples of what has or has not worked
- This is not a comprehensive list – use other sources of information and data

B. How to Use These BMPs

- Use the following BMPs as a field reference guide
- Use these BMPs as a foundation to start with
- Share these BLMs with others in your office, project managers, operators, etc.
- Monitor and document the success of these BMPs
- Pass on good BMPs to other field office, state leads and other contacts

C. Additional References

- Look for Best Management Practices on BLM's Web Site at:

  www.blm.gov/nhp/300/wo310/O&G/Ops/operations.html

- For more information about the Visual Resource Management System, visit the VRM web site:

  www.blm.gov/nstc/VRM

Blank Page – For Additional Notes

Unit 4: BMPs - Table of Contents:

I. BACKGROUND

The Bureau of Land Management (BLM) is responsible for protecting the scenic values on public lands.

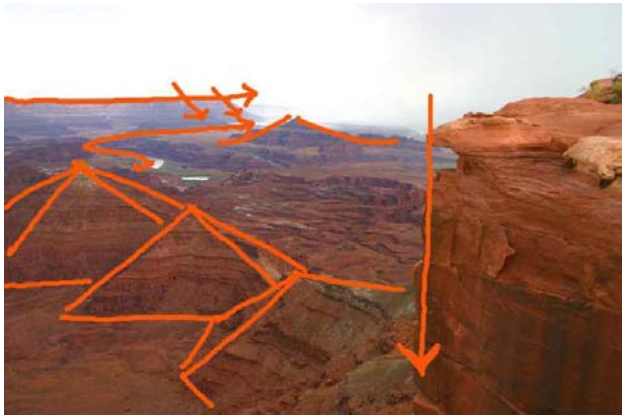
BLM uses the **Visual Resource Management (VRM) system** to help us protect scenic values by reducing visual **contrast** in the landscape.

What contrast is evident in this photo?

Through the VRM system, BLM analyzes the character of the landscape using the elements of:

FORM
LINE
COLOR
TEXTURE

The graphic overlay here helps demonstrate this analysis.



All types and varieties of landscapes can be and described in terms of form, line, color, and texture.

This helps us to design projects and activities that blend with these elements.

VRM <u>Best Management Practices</u> (BMPs) are based on the fundamental principles in the VRM system.

BEST MANAGEMENT PRACTICES:

What are they?

"Best Management Practices are Better ways for Achieving Better Results"

- Outcome based and results oriented.
- The result of constant improvement in the way we conduct business**.**

Before we go any further lets take a little test.

Looking at this photo:

Question: What mitigations could have been used to lessen the visual impact viewing this site?

View from a scenic trail with high visitor use

II. OVERVIEW of BMPs

5 Basic Concepts:

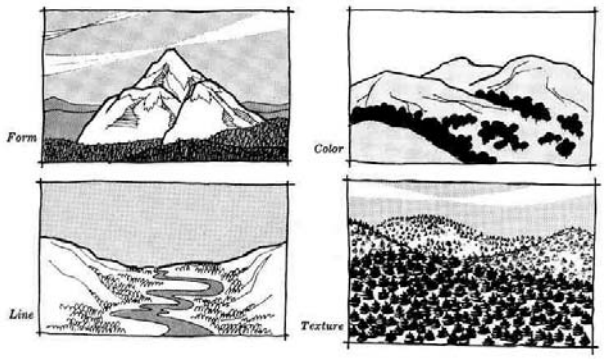
1. MINIMIZE CONTRAST.
2. Key observation points
3. Reduce surface disturbance
4. Other resource benefits
5. Leadership supports BMP's

 # 1: It is all about **CONTRAST**

Repeat Elements of:

- Form
- Line
- Color
- Texture

To minimize contrast to characteristic landscape



 # 2: Consider **how** and **where** the development **will be seen from**:

Key Observation Points could be:

- **linear features:** byways, trails, rivers (a continually moving view)
- **points:** scenic overlooks, residential areas (stationary long duration views)

3: Reduce surface disturbance:

The more long-term surface disturbance you have, the more visual contrast you will have.

The larger the scale of the disturbance, the more contrast as well.

It's not just the pad; consider roads, pipelines and ancillary facilities too.

4: Other Benefits:

VRM is not the sole resource we are managing.

We manage the larger "landscape" for minerals, wildlife, recreation, soils, water, etc…

As you will see, many other resources BLM manages benefit from the same techniques we use to reduce visual impacts.

#5: Leadership supports BMPs.

- BLM Washington Office **strongly encourages** use of VRM - BMPs in **ALL** Field Offices (FOs).
- Many BMPs are already Standard Operating Practices (SOPs) in offices throughout the Bureau.

If VRM - BMPs are not SOPs in your FO, they should be PDQ! OK?

However, please note:

- Not all BMPs are suitable for all locations and situations.
- Use your best judgment and the National Environmental Policy Act (NEPA) process to evaluate the need for VRM mitigation and to analyze mitigation alternatives.
- As you consider what mitigation is best, also consider implementation cost $ to operator.
- After the project has been completed, evaluate the results and make adjustments to future permits, as necessary.

III. VRM BMP PRINCIPLES

The VRM system provides us with many **basic principles and techniques** to help reduce contrast.

As they relate to Fluid Minerals and similar development, the 4 most critical are:

A. Proper Site Selection
B. Reduce Unnecessary Disturbance
C. Choice of Color
D. Final Reclamation

A. Proper Site Selection

- **Location; Location; Location**…Proper site selection can be the most important tool for reducing visual contrast.

- Work with the operator to choose the best site access and facility location to mitigate for visual impacts.

- Do your best to avoid visually sensitive areas.

Avoid placing facilities on ridge tops.

Ridge top facilities are highly visible from great distances because they are skylined. Roads, on the other hand, may be less visible if located along ridge tops, but if they are located on the ridge face they can be highly visible because of increased cut, fill and side cast material.

Move facilities further from key observation points to reduce their apparent size.

This may necessitate moving facilities from the shoulder of roads and trails, and placing them in the background of the view.

NOTE: Try locating the "Juniper Green" Pump-jack in this photograph.

Avoid locating facilities near "prominent" features. A prominent feature may be something with a specific name or that serves as a landmark.

Can you think of any prominent features or landmarks in your area that should be avoided?

Use natural or artificial features such as topography, vegetation, or an artificial berm **to help screen** facilities.

Locate facilities in a swale, around the bend, behind a ridge, or create a natural looking, vegetated berm.

Dark green pumping unit partially screened by junipers.

Consider cumulative effects, for example:

One or two properly mitigated wells along a scenic byway may not exceed the visual threshold.

But what if there were 5, 10 or 15 wells?

Effective visual mitigation becomes more critical with additive impacts.

Plan the road system.

Work with the operator to plan the road system for a new or expanding field.

Planned road systems result in less surface disturbance and save in construction and maintenance costs.

Design roads and other linear facilities to **follow the contour of the landform** or mimic lines in the vegetation.

Avoid a straight road that will draw the viewer's eye and attention straight toward the production facilities at the end of the road.

An example of road following existing lines in landscape.

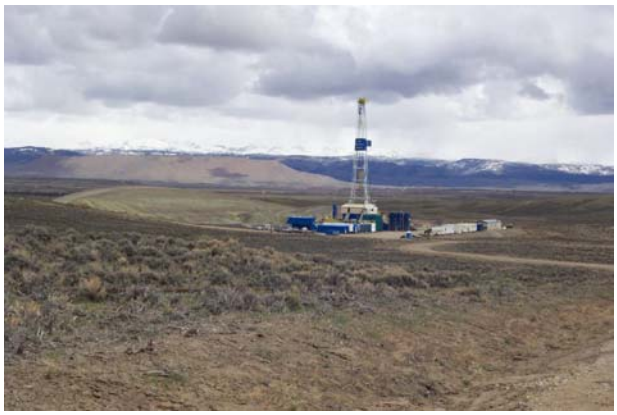
Is the Road in the best location? Do not reuse existing roads just because they are preexisting and you are hesitant to disturb new areas. **Choose the best location for the road.** Consider safety and maintenance requirements as well as visual and habitat needs. However, mitigate the construction of a new road by recontouring and revegetating the old bypassed road.

A new road was constructed without reclaiming the former road.

BOTTOM LINE:
Work with the operator to ensure proper siting **prior to the submission of the permit application** to minimize adverse visual impacts.

This can create a win-win-win for the operator, the public, and BLM.

Well drilled in a swale out of view from scenic areas.



B. Reduce Unnecessary Disturbance

The second step to minimizing visual contrast is through the reduction of soil and vegetative disturbance.

Avoid locating roads and pipelines on steep slopes.

Follow the contours of the land to reduce earthwork/disturbance.

The visual scar created by this cut is visible for great distances. An example of bad "line."

Similarly, avoid locating well pads on steep slopes.

Well pads on steep slopes can create large cut and fill slopes which are more expensive to reclaim and are highly visible from long distances.

If you must locate on a steep slope, avoid the side cast of materials.

Construct the minimum road necessary!

Consider using **2-Track roads** for:

1. Exploration wells that could become dry holes.
2. Production wells with very low vehicle use during production.

BLM 9113 Roads Manual – "Bureau roads must be designed to an appropriate standard no higher than necessary to accommodate their intended functions…"

Intermediate Reclamation of Roads

Once the road cross-section is constructed, revegetate all disturbed areas to reduce the visual size of the road.

Initiate **"intermediate reclamation"** of roads immediately after construction by returning topsoil to cuts, fills, and borrow ditches and reseeding.

Share Rights-of-ways

To minimize surface disturbance, roads and utilities should share common rights-of-ways.

Also, consider burying power in areas that are visually sensitive.

NOTE: Utilities and flow lines are buried within this 2-Track road to a coalbed natural gas well.

Bury Flowlines in the Road

Flowlines buried in the road (existing disturbance) are less visually contrasting than surface lines running cross-country.

Don't forget Housekeeping!

Keep a clean well location.

Poor housekeeping is unnecessary and creates a poor image of the program in the eyes of the public.

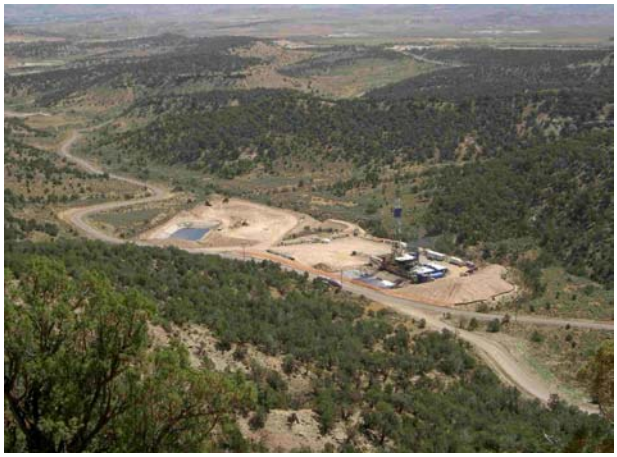
Yes, this really is a Well Pad

Consider moving the well location to a better site.

When Possible:

- Choose a flat area.
- Find an area hidden from view.

This very large well location was moved to the only area flat and large enough to accommodate its size. The operator minimized cuts and fills and avoided the highly visible areas.



Minimize topsoil removal in flat areas by:

- brush-beating or mowing the well location
- parking on the grass
- only excavating topsoil and subsoil where absolutely necessary, such as for the reserve and mud pits or for leveling the drill rig.

Reduce the pad size.

Work with the operator to reduce the pad size to the minimum that is needed, without compromising safety.

Minimal well pad area at this site

Centralize tank batteries out of sight.

The tank batteries are typically the largest production facility structures. Centralize the tank batteries for several wells in a place that is less visible from key observation points.

Co-locate wells

Where practical, co-locate wells to reduce road, pad, and utility surface disturbance.

The 6 wells located on this pad result in 5 fewer well pads, access roads, and utility corridors.

Intermediate Reclamation of Well Locations

Minimize the disturbed area of well locations through **intermediate reclamation**. Intermediate reclamation is critical to reducing the visual impact of well production, which can run from several to many years.

Note how this well location blends with the surrounding topography, vegetation, and open areas in the landscape by repeating the "form" and "line" of the landscape and vegetation.

Intermediate reclamation!

Intermediate reclamation that is done well will greatly reduce visual contrast.

Paradigm shift: It is **OK** to drive, park, and set up a workover rig on restored vegetation. Just fix it up when you leave.

Plan for Intermediate Reclamation: Place production facilities on the well location correctly so that you allow the maximum room for recontouring of the well location. Production facilities should typically be placed near the center of the well location.

Because these production facilities were placed against the highwall, the location could not be adequately recontoured!

Steps to Intermediate Reclamation:

1. Leave enough flat area to enable setting up the workover rig.
2. Where possible, recontour **everything else** to the original, natural contour.
3. Respread stockpiled topsoil so that vegetation extends up to, or within 10 to 15 feet of the production facilities. Respread topsoil maintains its viability.
4. Gravel a drive-around or load-out area, only if necessary.

Encourage the encroachment of native vegetation.

Proper intermediate reclamation can lead to the reestablishment of local, native vegetation resulting in the "restoration" of the landscape to nearly its original character.

Oil field, water injection well with well location nearly fully "restored" to native vegetation.

<u>Barren Areas</u> = Mud + Weeds + Maintenance + Lost Forage + Increased Visual Contrast

Leaving large, barren well locations during the life of the well will increase visual impacts and other impacts including soil loss, noxious weeds, forage loss, and maintenance costs. Stockpiled topsoil will also lose much of its viability over time.

BOTTOM LINE:
Work with the operator to minimize the footprint of roads, utilities, production facilities, and well locations.

This can create a win-win-win situation for the operator, the public, and the BLM.

If we did a good job of Intermediate Reclamation, then Final Reclamation needs and costs will be greatly reduced.

C. Choice of COLOR

COLOR is generally the least expensive and most common design (or mitigation) measure to reduce visual contrast.

VRM Principle: A strong contrast in color can be seen over a large distance.

Note how the "white" tank color forms a strong contrast against surrounding vegetation

Select colors one or two shades darker than the predominant background color, typically a **vegetated** background.

Squinting can help determine the best overall color choice.

Paint fades over time and becomes oil stained. Use semi-gloss paint, because it resists weathering and staining.

Don't select colors to simply match the exposed soil. **Consider the <u>overall dominant color</u> in the landscape**, especially when the background consists primarily of **vegetation**.

Avoid the use of "BLM Desert Tan" or "Desert Brown" because most landscapes aren't this light.

These tanks are highly visible against the darker sagebrush, even at great distance.

Always select the proper color, but use common sense. Custom colors may not be necessary for all areas.

However, in highly scenic areas frequently viewed by the public, proper color choice becomes even more critical.

The desert tan color of the tank and pumping unit detract from the mountain scenery.

The **"Standard Environmental Color Chart"** is a good place to <u>start looking</u> for color options**,** but other colors <u>may be better:</u>

1. Remember key observation points!
2. Consider primary seasons of use.
3. Consider the most common lighting conditions: front vs. back-lighted.
4. Hold the chart up to the background to help with color selection, SQUINT!
5. Choose a color that matches the background, + 1 or 2 shades darker.

Constant improvement!

Consider colors other than those found on the Standard Environmental Colors chart. Experiment. Approve a few permits with a color choice you feel is best. Take a look at it in the field and over time. Stand back a ways. Did the color work? If not, make adjustments to future permits. Document custom blends.

Look at the difference color can make….

NOTE: There are two towers; can you spot the dark green tower as easily?

We CAN and have done this!

This dark green pumping unit blends well with the dominant pinon and juniper vegetation.

Partial Conformance?

The color you select may blend fairly well with the background, but if the site is accessorized with white well signs or silver electrical boxes, the site will remain highly visible.

Partial Conformance?

All long-term facilities in a particular location should be painted the same color.

An operator is typically provided 60 to 90 days to paint new equipment or buildings moved onto the site.

This mix of colors increases contrast within the site and attracts attention.

Visual Simulations.

Which tank color would you choose?

Simulations can be used in NEPA documents, public meetings, and discussions with the operator.

Simulation software even allows you to pick custom colors that you can have mixed at a paint store!

Taking it to the next level: Camouflage

Camouflage may be the most appropriate solution for some highly sensitive sites, if executed properly.

Camouflage helps a flat surface replicate the "texture" of the landscape and vegetation.

Remember there's likely more than one view to consider! Don't match the sky!

The Disguise

Sometimes, what is called for is a good disguise, one that does not attract attention because it is commonly seen in the area.

Natural gas compressor station near a high value residential area. Designed to look like a local barn - it fits the local cultural landscape

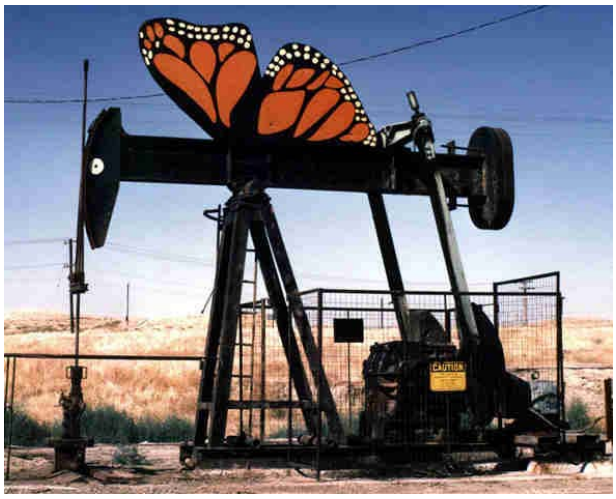
Highly visible, yet unnoticeable for what it is.

In some environments, a good disguise may attract attention but still may fit within its landscape context.

Disguised drill rig hidden in blue & white tower.

But probably not in this case.

Adding the "butterfly" will greatly attract attention, especially with the motion of the pumpjack



BOTTOM LINE:

Work with the operator to select the proper color-related mitigation.

As with before, this can minimize adverse visual impacts and be a win-win-win for the operator, the public, and BLM.

D. Final Reclamation

What will be the long-term impacts of oil and gas production? What will the former road and well location look like 3 years or even 300 years from abandonment? Will there be a permanent scar?

Oil and gas development is a <u>temporary use</u> of the land and its impacts should be temporary as well.

The goal of final reclamation is to return all disturbed areas to a condition where, over time, the disturbed areas will be absorbed back into the seamless, natural landscape. If it looks good, it probably is good.

There are steps we can and should take to accelerate this process……..

Beautifully reclaimed well location.

1. Drilling & Reclaiming the Well: A Series

The actual drilling of a well can result in a very high but, short-term visual contrast.

Wells going into production should undergo **intermediate reclamation** to reduce visual contrast and benefit other resources. If the well is a "dry hole" **final reclamation** should begin as soon as practical to restore the land to its previous productive use.

2. Restore the landform:

- Restrip topsoil and vegetation from all areas to be recontoured. Do not hesitate to restrip healthy vegetation and topsoil if the landform is not correct. You can always grow vegetation, but a damaged landform is noticeable forever.
- Recontour the well location back to the original contour or a natural looking contour that blends with the surrounding topography.

3. Site Preparation:

- Respread topsoil that had been salvaged.
- Roughen the surface to trap moisture and seed.
- Consider the use of a high phosphorous/low nitrogen fertilizer and mulch for those sites subject to wind or water erosion.

4. Revegetate with native species:

Revegetation may result in a color contrast over the short-term, but if you used native seed, the local native plants can be expected to recolonize over time.

A good job of recontouring, site preparation, and seeding, will greatly reduce the visibility of the well site 20 years from abandonment.

Reclaiming Roads

Nearly all oil and gas roads should be reclaimed following abandonment of the producing wells. Ripping and seeding roads is usually not sufficient. Most roads need be recontoured back to the original contour so that they absorb back into the landscape.

Leaving a Rough Texture

Recontouring to a rough texture helps trap **broadcast seed** and moisture, deters off-road travel, and helps to match the "texture" of the surrounding landscape.

BEFORE:

Areas to be drill seeded must have a somewhat smoother texture.

Recontoured 20' wide pipeline right-of-way. Note: Due to the outward slope of this right-of-way, the waterbars are unnecessary except to deter traffic.

AFTER:

The result, reclamation we can be proud of!

BOTTOM LINE: Work with the operator to plan, design, implement, and monitor final reclamation to minimize adverse visual impacts in the long term, and be a win-win-win for the operator, the public, and BLM.

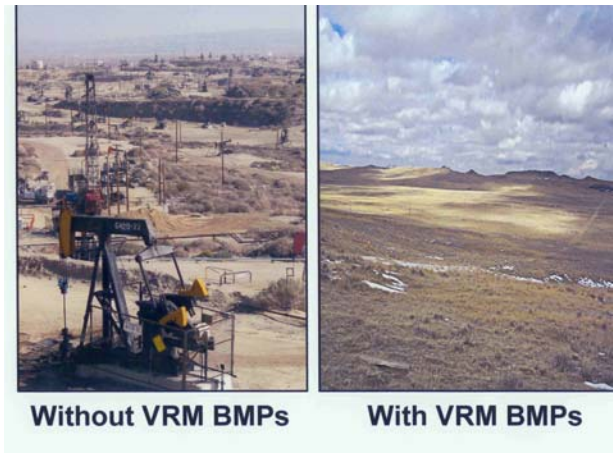
Applying what we have learned, what visual resource BMPs could we use to minimize the visual impacts of this site?

1.
2.
3.
4.
5.

Visual Resource Management – Best Management Practices <u>do</u> make the difference.

On the Left: *Intensive oil field development using standard practices.*

On the Right: *Coalbed methane using VRM-BMPs.*



As a reminder, the Best Management Practices are at:

www.blm.gov/nhp/300/wo310/O&G/Ops/operations.html

These will be updated periodically, so be sure to bookmark this URL.

If you have any photos, graphics or other items to contribute to this site, send them to Jim Perry, WO 310.

Unit 5 – How to Incorporate BMPs Into Your Work

Objective: Provide tips and techniques on how to incorporate BMPs into your everyday work, including Assistant Directors perspective on your roles, project documentation, scenic value re-enforcement, collaboration tips and negotiating techniques.

A. AD's Overviews

- BMPs have support up to Secretary of Interior
- Were not developed in a vacuum – worked with numerous groups
- We can't duck our heads in sand
- Need energy development that is environmentally sound

B. We need to identify early on:

- What are the sensitive resources that could be affected?
- How might they be affected by energy development?
- What type of mitigation are appropriate?
- What are costs and time involved?
- Who are interested parties?

C. Many of development scenarios pose complex challenges:

- Don't ignore the problems you are "seeing"
- Work w/realty specialists and VRM contacts from other offices
- Get objective views from others
- Identify the real "interest" of each party
- Don't give up

D. Your Roles

- Take initiative – take ownership of landscape and ADP process
- Start discussions with your peers
- Involve applicants and operators
  - Discuss options
  - Describe issues
  - Reach agreement – get by
  - Have operator incorporate agreed to mitigation into the APD

E. Additional Tips

- Prioritize measures
- Identify time and costs
- Explore different techniques (think outside the box)

F. Project Documentation

- Document what is and is not working, and why
  - Is color scheme working?
  - Did seeding take place?
  - Are the BMPs effective?
- Monitor these sites over time
- Improve your knowledge through training, mentors, communication
- Get out on the ground

G. Re-enforce Values of Scenic Resources

- BLM lands are valued more for scenic values
- Use BMPs to reduce potential visual impacts
- These BMPs not created out of thin air
- Practices build on solid design techniques – used already by many offices
- Good planning – needed at all levels
- Make BMPs part of the solution

Tips in Collaborating/Negotiating

- Schedule pre-permitting meetings
- Listen to operator needs – explain our resource concerns
- Explain reasons for managing landscape – empower operators to come up with solutions
- Be sensitive to industry needs
- Solve issues together

Summary:

- Work with operator up-front to develop outstanding APDs to minimize needs for mitigation
- Work in a team setting and achieve consensus – office needs to speak with one voice
- Incorporating and documenting these BMPs will provide you more solid ground when you are called to defend your actions
- It promotes good land stewardship

As a reminder, the Best Management Practices are at:

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Blank Page – For Additional Notes

Unit 6 – Final Questions and Wrap Up

Additional comments by individual instructors:

A. Walt George:

B. Rob Sweeten:

C. Brad Cownover:

D. Jim Perry:

E. Sally Wisely:

- These are standard operating procedures
- We want BLM to be leaders in Oil and Gas development
- The Director supports your efforts
- The image of the Oil and Gas program is dependent on your . . . .

"Incorporating These into You Job"